

Coach



Push ▶ for reading content aloud.



What should your next steps be to assess and treat this patient?

You got it!

- Your Answer | Establish IV access
- Your Answer | Obtain a 12-lead ECG
- Your Answer | Maintain the airway and administer oxygen if needed
 - [Algorithm](#)
 - [Learn more](#)

 I Know It

[CHALLENGE US](#) [NEXT](#)

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

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RESPIRATORY RATE AND TIDAL VOLUME



Normal and Abnormal Breathing

The average respiratory rate for an adult at rest is about 12 to 20/min. Typically, a tidal volume of 6 mL/kg, or approximately 500 mL, maintains normal oxygenation and elimination of CO₂.

- Tachypnea is a respiratory rate above 20/min, and bradypnea is a respiratory rate below 12/min.
- A respiratory rate below 6/min (hypoventilation) requires assisted ventilation with a bag-mask device or advanced airway with 100% oxygen.

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment



Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



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~4h 17m left

TT Ahmed Othman

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Learn more here:

Respiratory Rate and Ti...



What is the average respiratory rate for an adult at rest?

You got it!

Your Answer

| 12 to 20/min



I Know It

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Self-Assessment

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LTI does not have a session time





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Learn more here:

Respiratory Rate and Ti...



What **tidal volume** typically maintains normal oxygenation and elimination of carbon dioxide?

You got it!



Your Answer

| 6 to 8 mL/kg



I Know It

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Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



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HOW RESPIRATORY DISTRESS AND RESPIRATORY FAILURE CAN LEAD TO RESPIRATORY ARREST



Respiratory Distress

Respiratory distress is a clinical state characterized by abnormal respiratory rate or effort—either increased (eg, tachypnea, nasal flaring, retractions, use of accessory muscles) or inadequate (eg, hypoventilation, bradypnea).

Respiratory distress can range from mild to severe. For example, a patient with mild tachypnea and a mild increase in respiratory effort with changes in airway sounds is in mild respiratory distress.

A patient with marked tachypnea, significantly increased respiratory effort, deterioration in skin color, and changes in mental status is in severe respiratory distress. Severe respiratory distress can indicate respiratory failure.

Signs of respiratory distress (varying severity)

- Tachypnea
- Increased respiratory effort (eg, nasal flaring, retractions)
- Inadequate respiratory effort (eg, hypoventilation, bradypnea)
- Abnormal airway sounds (eg, stridor, wheezing, grunting)
- Tachycardia
- Pale, cool skin (however, some causes of respiratory distress, like sepsis, may cause warm, red, and

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NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



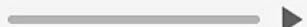
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HOW RESPIRATORY DISTRESS AND RESPIRATORY FAILURE CAN LEAD TO RESPIRATORY ARREST

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- Inadequate respiratory effort (eg, hypoventilation, bradypnea)
- Abnormal airway sounds (eg, stridor, wheezing, grunting)
- Tachycardia
- Pale, cool skin (however, some causes of respiratory distress, like sepsis, may cause warm, red, and diaphoretic skin)
- Changes in level of consciousness/agitation
- Use of abdominal muscles to help breathe

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



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1 2 3 **NEXT**

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HOW RESPIRATORY DISTRESS AND RESPIRATORY FAILURE CAN LEAD TO RESPIRATORY ARREST



Respiratory Failure

Respiratory failure is a clinical state of inadequate oxygenation, ventilation, or both. Respiratory failure is often the end stage of respiratory distress.

If the patient has abnormal central nervous system control of breathing or muscle weakness, they may show little or no respiratory effort despite being in respiratory failure. In these situations, you may need to identify respiratory failure based on clinical findings. Confirm the diagnosis with objective measurements, such as pulse oximetry or blood gas analysis.

Suspect probable respiratory failure if some of the following signs are present:

- Marked tachypnea
- Bradypnea, apnea
- No respiratory effort
- Poor to absent distal air movement
- Bradycardia
- Cyanosis
- Stupor, coma (late)

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

PREVIOUS 1 2 3 NEXT

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HOW RESPIRATORY DISTRESS AND RESPIRATORY FAILURE CAN LEAD TO RESPIRATORY ARREST

If the patient has abnormal central nervous system control of breathing or muscle weakness, they may show little or no respiratory effort despite being in respiratory failure. In these situations, you may need to identify respiratory failure based on clinical findings. Confirm the diagnosis with objective measurements, such as pulse oximetry or blood gas analysis.

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- Bradypnea, apnea
- No respiratory effort
- Poor to absent distal air movement
- Bradycardia
- Cyanosis
- Stupor, coma (late)

Respiratory failure can result from upper or lower airway obstruction, lung tissue disease, and disordered control of breathing (eg apnea or shallow, slow respirations). When respiratory effort is inadequate, respiratory failure can occur without typical signs of respiratory distress. Respiratory failure requires intervention to prevent deterioration to cardiac arrest. Respiratory failure can occur with a rise in arterial CO₂ levels (hypercapnia), a drop in blood oxygenation (hypoxemia), or both.

Respiratory distress can lead to respiratory failure and respiratory failure can lead to respiratory arrest.

Self-Assessment



Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

PREVIOUS 1 2 3 NEXT

CHALLENGE US



Coach



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HOW RESPIRATORY DISTRESS AND RESPIRATORY FAILURE CAN LEAD TO RESPIRATORY ARREST



Respiratory Arrest

Respiratory arrest is the absence of breathing, usually caused by an event such as drowning or head injury. Another cause of respiratory arrest may be causes of centrally mediated respiratory failure, such as opiate overdoses.

For an adult in respiratory arrest, provide a tidal volume of approximately 500 to 600 mL (6 to 7 mL/kg) to produce visible chest rise. Patients with airway obstruction or poor lung compliance may need higher pressures to produce visible chest rise.

A pressure-relief valve on a resuscitation bag-mask device may prevent sufficient tidal volume in these patients, so ensure that you can bypass the device's pressure-relief valve and use high pressures, if necessary, to produce visible chest rise. **Avoid excessive ventilation** (too many breaths or too large a volume) during respiratory arrest and cardiac arrest.



Avoid Excessive Ventilation

If a patient is in respiratory arrest and has a pulse, but is not breathing, ventilate once every 6 seconds. After 2 minutes, reassess the pulse. Avoid excessive ventilation during respiratory arrest and cardiac arrest. Excessive ventilation can cause gastric inflation and complications such as regurgitation and aspiration.

PREVIOUS

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Self-Assessment



Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Coach



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HOW RESPIRATORY DISTRESS AND RESPIRATORY FAILURE CAN LEAD TO RESPIRATORY ARREST

poor lung compliance may need higher pressures to produce visible chest rise.

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Excessive ventilation can be harmful because it

- Increases intrathoracic pressure
- Decreases venous return to the heart
- Diminishes cardiac output and survival
- May cause cerebral vasoconstriction, reducing blood flow to the brain

PREVIOUS

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Self-Assessment



Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Coach



An 18-year-old patient is reporting difficulty breathing and is displaying increased respiratory effort.

Auscultation reveals bilateral wheezing.

The respiratory rate is 28 breaths per minute.

Oxygen saturation is 91%.

PETCO₂ is 44 mm Hg.

How would you categorize this patient's condition?

Autoplay On

HIDE TEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

1

2

- An 18-year-old patient is reporting difficulty breathing and is displaying increased respiratory effort.
- Auscultation reveals bilateral wheezing.
- The respiratory rate is 28 breaths per minute.
- Oxygen saturation is 91%.
- PETCO₂ is 44 mm Hg.

How would you categorize this patient's condition?

CHOOSE THE CORRECT ANSWER

Respiratory failure

Respiratory arrest

Normal respiratory status

Respiratory distress

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Coach



An 18-year-old patient is reporting difficulty breathing and is displaying increased respiratory effort.

Auscultation reveals bilateral wheezing.

The respiratory rate is 28 breaths per minute.

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PETCO₂ is 44 mm Hg.

How would you categorize this patient's condition?

Autoplay On

HIDE TEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

1

2

- An 18-year-old patient is reporting **difficulty breathing** and is displaying **increased respiratory effort**.
- Auscultation reveals **bilateral wheezing**.
- The **respiratory rate** is 28 breaths per minute.
- **Oxygen saturation** is 91%.
- **PETCO₂** is 44 mm Hg.

How would you categorize this patient's condition?

You got it!

Your Answer

| Respiratory distress



I Know It

CHALLENGE US

NEXT

Coach



A 59-year-old patient is reporting difficulty breathing.

Physical examination reveals nasal flaring, intercostal retractions, and use of accessory muscles.

The respiratory rate is 28 breaths per minute.

Oxygen saturation is 92%.

PETCO₂ is 36 mm Hg.

How would you categorize this patient's

Autoplay On

HIDE TEXT ||

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



2

- A 59-year-old patient is reporting difficulty breathing.
- Physical examination reveals nasal flaring, intercostal retractions, and use of accessory muscles.
- The respiratory rate is 28 breaths per minute.
- Oxygen saturation is 92%.
- PETCO₂ is 36 mm Hg.

How would you categorize this patient's condition?

CHOOSE THE CORRECT ANSWER

Respiratory failure

Normal respiratory status

Respiratory arrest

Respiratory distress

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Coach



A 59-year-old patient is reporting difficulty breathing.

Physical examination reveals nasal flaring, intercostal retractions, and use of accessory muscles.

The respiratory rate is 28 breaths per minute.

Oxygen saturation is 92%.

PETCO₂ is 36 mm Hg.

How would you categorize this patient's

Autoplay On

HIDE TEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



2

- A 59-year-old patient is reporting difficulty breathing.
- Physical examination reveals nasal flaring, intercostal retractions, and use of accessory muscles.
- The respiratory rate is 28 breaths per minute.
- Oxygen saturation is 92%.
- PETCO₂ is 36 mm Hg.

How would you categorize this patient's condition?

Not there yet...

Your Answer

| Respiratory failure

Correct Answer

| Respiratory distress

Learn more here: How Respiratory Distress and Respiratory Failure Can Lead to Respiratory Arrest



I Know It

CHALLENGE US

NEXT



43% PROGRESS: HeartCode ACLS 2025

AHMED OTHMAN

A



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- A 75-year-old patient is having **difficulty breathing**, with increased respiratory effort.
- The patient has a **history of emphysema**.
- The patient is **drowsy**.
- Auscultation reveals **bilateral wheezing**, although the lung sounds are difficult to appreciate.
- The **respiratory rate** is 38 breaths per minute.
- **Oxygen saturation** is 85%.
- **PETCO₂** is 49 mm Hg.

How would you categorize this patient's condition?

CHOOSE THE CORRECT ANSWER

Normal respiratory status

Respiratory distress

Respiratory arrest

Respiratory failure

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Learn more here:

 How Respiratory Distre...

- A 75-year-old patient is having difficulty breathing, with increased respiratory effort.
- The patient has a history of emphysema.
- The patient is drowsy.
- Auscultation reveals bilateral wheezing, although the lung sounds are difficult to appreciate.
- The respiratory rate is 38 breaths per minute.
- Oxygen saturation is 85%.
- PETCO₂ is 49 mm Hg.

How would you categorize this patient's condition?

You got it!



Your Answer

| Respiratory failure



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

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What is the term for the rise in arterial carbon dioxide levels typically associated with respiratory failure?

CHOOSE THE CORRECT ANSWER

Hypoxemia

Hyperventilation

Bradypnea

Hypercapnia

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



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Learn more here:

How Respiratory Distre...



What is the term for the rise in arterial carbon dioxide levels typically associated with respiratory failure?

You got it!



Your Answer

| Hypercapnia



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

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How much tidal volume must you provide with a bag-mask device to produce visible chest rise for an adult patient in respiratory arrest?

CHOOSE THE CORRECT ANSWER

2 to 3 mL/kg

4 to 5 mL/kg

6 to 7 mL/kg

8 to 9 mL/kg

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



LTI does not have a session time





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Learn more here:

How Respiratory Distre...



How much tidal volume must you provide with a bag-mask device to produce visible chest rise for an adult patient in respiratory arrest?

You got it!

Your Answer | 6 to 7 mL/kg

 I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



45% PROGRESS: HeartCode ACLS 2025

~4h 17m left

TT Ahmed Othman

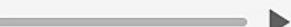
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What device on a resuscitation bag-mask device may prevent sufficient tidal volume in patients with poor lung compliance?

CHOOSE THE CORRECT ANSWER

HEPA or viral filter

PETCO₂ cuvette

Pressure-relief valve

Manometer

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

45% | PROGRESS: HeartCode ACLS 2025

~4h 17m left

Coach



Learn more here:

How Respiratory Distre...



What device on a resuscitation bag-mask device may prevent sufficient tidal volume in patients with poor lung compliance?

You got it!

Your Answer

| Pressure-relief valve

I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



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MANAGING RESPIRATORY ARREST

Management of respiratory arrest includes both BLS and ACLS interventions

- Giving supplemental oxygen
- Opening the airway
- Providing basic ventilation
- Using basic airway adjuncts (oropharyngeal airway and nasopharyngeal airway)
- Suctioning

Remember, for patients with a perfusing rhythm, deliver breaths once every 6 seconds.



Giving Supplemental Oxygen

Give oxygen to patients with acute cardiac symptoms or respiratory distress. Monitor their oxygen saturation. For patients in respiratory or cardiac arrest, strive for 100% oxygen saturation.

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



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Learn more here:

Managing Respiratory ...



Patients with perfusing **rhythms** should receive **ventilations** once every **6** seconds.

You got it!



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

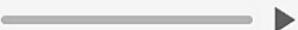


ADVANCED DECISIONS

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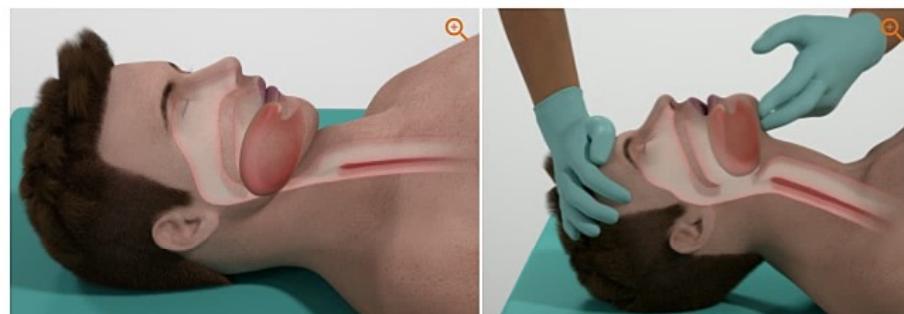
1- AND 2-RESCUER USE OF BAG-MASK DEVICES



Opening the Airway

Let us begin with basic airway skills. The first 2 steps in any airway management response involve opening and clearing the airway.

First, open the airway by using a head tilt-chin lift maneuver. Place one hand on the victim's forehead and push with your palm to tilt the head back. Place the fingers of the other hand under the bony part of the lower jaw, near the chin. Lift the jaw to bring the chin forward.



In patients with suspected cervical spine trauma, use the jaw-thrust maneuver to reduce neck and spine movement. Open the patient's airway by using a jaw thrust without head extension. But remember that maintaining a patent airway and providing adequate ventilation are your priorities, so use a head tilt-chin lift maneuver if the jaw thrust is not effective.

1 2 3 **NEXT**

CHALLENGE US



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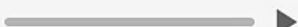
ADVANCED BEGINNER



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Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

1- AND 2-RESCUER USE OF BAG-MASK DEVICES



In patients with suspected cervical spine trauma, use the jaw-thrust maneuver to reduce neck and spine movement. Open the patient's airway by using a jaw thrust without head extension. But remember that maintaining a patent airway and providing adequate ventilation are your priorities, so use a head tilt-chin lift maneuver if the jaw thrust is not effective.

Have another team member stabilize the patient's head in a neutral position as you manipulate the airway. Restrict spinal motion manually rather than with immobilization devices. Manual spinal immobilization is safer, and cervical collars may complicate airway management or even interfere with airway patency. Spinal immobilization devices are helpful during transport.



1 2 3 **NEXT**

CHALLENGE US ?

Coach



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1- AND 2-RESCUER USE OF BAG-MASK DEVICES



Bag-Mask Ventilation Procedure

Bag-mask devices are the most common way to provide positive-pressure ventilation. When you use a bag-mask device, deliver approximately 500 to 600 mL tidal volume sufficient to produce chest rise over 1 second. Bag-mask ventilation is not the recommended method of ventilation for single rescuers during CPR. (A single rescuer should use a pocket mask for ventilation, if available.) Providers can use the following techniques to hold the bag-mask device, depending on the number of rescuers.

1 rescuer

The rescuer gets into position at the patient's head and circles the thumb and first finger around the top of the mask (forming a "C") while using the third, fourth, and fifth fingers (forming an "E") to lift the jaw. This is called the **E-C clamp** technique.



Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



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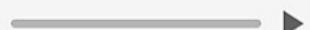
PREVIOUS 1 2 3 NEXT

CHALLENGE US ?

Coach



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Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

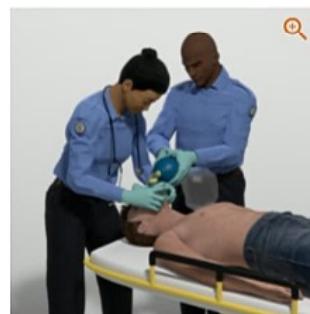
1- AND 2-RESCUER USE OF BAG-MASK DEVICES



2 rescuers

The most effective way to deliver bag-mask ventilation is to use the 2-person technique. The first provider focuses on keeping the airway open and securing the mask while the second provider delivers ventilation with the bag.

- The rescuer at the patient's head tilts the patient's head and seals the mask against the patient's face, with the thumb and first finger of each hand creating a "C," to provide a complete seal around the edges of the mask.
- The rescuer uses the remaining 3 fingers (the "E") to lift the jaw (this holds the airway open).
- The second rescuer slowly squeezes the bag (over 1 second) until the chest rises.
- Both providers should observe chest rise.



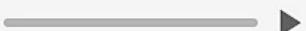
PREVIOUS 1 2 3 NEXT

CHALLENGE US ?

Coach



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1- AND 2-RESCUER USE OF BAG-MASK DEVICES

▶ Bag-Mask Valves and Ports

The universal connections on all airway devices allow you to connect any ventilation bag to numerous adjuncts.

Valves and ports may include

- One-way valves to prevent the patient from rebreathing exhaled air
- Oxygen ports to administer supplemental oxygen
- Medication ports to administer liquid and other medications
- Suction ports to clear the airway
- Attachments to provide quantitative sampling of ETCO₂

You can attach **other adjuncts** to the patient end of the valve, including a pocket face mask, laryngeal mask airway, laryngeal tube, esophageal-tracheal tube, and endotracheal tube. **Ongoing quantitative waveform capnography** can also be attached to a bag-valve apparatus as an additional indication that ventilation is effective. An obstructed airway with no air exchange will not produce exhaled carbon dioxide, even if the patient still has a pulse.

PREVIOUS

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I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER



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~4h 15m left

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What is the most effective way to deliver bag-mask ventilation?

CHOOSE THE CORRECT ANSWER

Using a jaw-thrust maneuver

Using a head tilt–chin lift maneuver

Using a 1-person technique

Using a 2-person technique

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions





46% | PROGRESS: HeartCode ACLS 2025

~4h 15m left

TT Ahmed Othman

A

Coach



Maybe this can help you?

1- and 2-Rescuer Use o...



What is the **most effective** way to deliver bag-mask ventilation?

Not there yet...

Your Answer

| Using a head tilt–chin lift maneuver

Correct Answer

| Using a 2-person technique

Learn more here: 1- and 2-Rescuer Use of Bag-Mask Devices



I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



46% PROGRESS: HeartCode ACLS 2025

~4h 18m left

TT Ahmed Othman

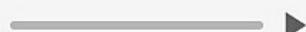
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How long should the second rescuer squeeze the bag-mask device when providing 2-rescuer ventilation?

CHOOSE THE CORRECT ANSWER

4 seconds

1 second

3 seconds

2 seconds

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



46% | PROGRESS: HeartCode ACLS 2025

~4h 18m left

TT Ahmed Othman

A



Coach



Learn more here:

1- and 2-Rescuer Use o...



How long should the second rescuer squeeze the bag-mask device when providing 2-rescuer ventilation?

You got it!

Your Answer

| 1 second



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



When performing the **jaw-thrust maneuver** on patients with suspected cervical spine injury, where should you **place your fingers**?

CHOOSE THE CORRECT ANSWER

Under the patient's chin

On top of the patient's jaw

Behind the patient's ears

Just under the angle of the lower jaw

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



LTI does not have a session time





46% | PROGRESS: HeartCode ACLS 2025

~4h 18m left

TT Ahmed Othman

A



Coach



Learn more here:

1- and 2-Rescuer Use o...



When performing the jaw-thrust maneuver on patients with suspected cervical spine injury, where should you place your fingers?

You got it!

Your Answer

| Just under the angle of the lower jaw



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

47% | PROGRESS: HeartCode ACLS 2025

~4h 16m left

TT Ahmed Othman

A

Coach



Push ▶ for reading content aloud.

FILL IN THE MISSING NUMBER(S)

When you use a bag-mask device, you should deliver approximately 500 to mL tidal volume.

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



47% PROGRESS: HeartCode ACLS 2025

~4h 16m left

TT Ahmed Othman

A



Coach



Learn more here:

1- and 2-Rescuer Use o...



When you use a bag-mask device, you should deliver approximately 500 to **600** mL tidal volume.

You got it!



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



47% PROGRESS: HeartCode ACLS 2025

~4h 17m left

TT Ahmed Othman

A



Coach



Push ▶ for reading content aloud.



AIRWAY ADJUNCTS



Airway Management

Properly positioning the airway may be all you need to do for patients who can breathe spontaneously. In patients who are unconscious, an OPA or NPA may be used to maintain an open airway.

Take the following precautions when using an **oropharyngeal airway (OPA)** or **nasopharyngeal airway (NPA)**:

- Always **check spontaneous respirations** immediately after inserting an OPA or NPA.
- If respirations are absent or inadequate, start **positive-pressure ventilation** at once with an appropriate device.
- If a bag-mask device is not available use a mouth to barrier device to provide ventilations.

1

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3

NEXT

CHALLENGE US



Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



AIRWAY ADJUNCTS



Basic Airway Adjunct: Oropharyngeal Airway (OPA)

The OPA is a J-shaped, single-use, disposable plastic device that fits over the tongue to hold both it and the soft hypopharyngeal structures away from the posterior wall of the pharynx. OPAs are available in various sizes, with the most common adult size ranging from 8 to 10.



Use this device for:

- Patients at risk of developing airway obstruction from the tongue or from relaxed upper airway muscles.
- Unconscious patients when other procedures (eg, head tilt-chin lift or jaw thrust) fail to maintain a clear, unobstructed airway.
- Facilitating suctioning of intubated patients' mouths and throats
- Preventing patients from biting and obstructing the ET tube

PREVIOUS

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NEXT

Self-Assessment



Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

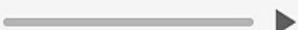
CHALLENGE US



Coach



Push ► for reading content aloud.



AIRWAY ADJUNCTS

of the pharynx. OPAs are available in various sizes, with the most common adult size ranging from 8 to 10.



Use this device for:

- Patients at risk of developing airway obstruction from the tongue or from relaxed upper airway muscles.
- Unconscious patients when other procedures (eg, head tilt-chin lift or jaw thrust) fail to maintain a clear, unobstructed airway.
- Facilitating suctioning of intubated patients' mouths and throats
- Preventing patients from biting and obstructing the ET tube

You may also use an OPA during bag-mask ventilation when a rescuer might unknowingly push down on the chin, blocking the airway. However, do not use an OPA with a conscious or semiconscious patient because it may stimulate gagging and vomiting.

PREVIOUS 1 2 3 NEXT

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



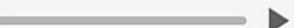
ADVANCED BEGINNER

CHALLENGE US ?

Coach



Push ▶ for reading content aloud.



AIRWAY ADJUNCTS



Basic Airway Adjunct: Nasopharyngeal Airway (NPA)

The NPA is used as an alternative to an OPA in patients who need a basic airway adjunct. The NPA is a soft rubber or plastic uncuffed tube that provides a conduit for airflow between the nostrils and the pharynx.



Unlike oral airways, NPAs may be used in conscious, semiconscious, or unconscious patients (patients with an intact cough and gag reflex). Use an NPA when inserting an OPA is technically difficult or dangerous, such as for patients with a gag reflex, trismus, massive trauma around the mouth, or wired jaws. You may also use NPAs in patients who are neurologically impaired with poor pharyngeal tone or coordination leading to upper airway obstruction.

PREVIOUS

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Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US ?



48% PROGRESS: HeartCode ACLS 2025

~4h 14m left

TT Ahmed Othman

A



Coach



Push ► for reading content aloud.



Which is a contraindication to the use of an oropharyngeal airway?

CHOOSE THE CORRECT ANSWER

Conscious patient

Absent gag reflex

Pediatric patient

Bag-mask ventilation

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions





48% | PROGRESS: HeartCode ACLS 2025

~4h 14m left

TT Ahmed Othman

A



Coach



Learn more here:

Airway Adjuncts



Which is a contraindication to the use of an oropharyngeal airway?

You got it!

Your Answer

| Conscious patient



I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



48% PROGRESS: HeartCode ACLS 2025

~4h 14m left

TT Ahmed Othman

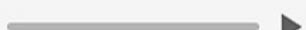
A



Coach



Push ▶ for reading content aloud.



In which of the following patients can nasopharangeal airways be used?

SELECT ALL THAT APPLY

- Patients with nasal trauma
- Conscious
- Unconscious
- Semiconscious

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



48% PROGRESS: HeartCode ACLS 2025

~4h 14m left

TT Ahmed Othman

A



Coach



Learn more here:

Airway Adjuncts



In which of the following patients can nasopharangeal airways be used?

You got it!

- Your Answer | Semiconscious
- Your Answer | Conscious
- Your Answer | Unconscious



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

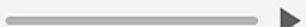


ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



OROPHARYNGEAL AIRWAY (OPA)

OPA Insertion Technique

- 1 Clear the mouth and pharynx of secretions, blood, or vomit by using a rigid pharyngeal suction tip if possible.
- 2 Select the proper size OPA and place it against the side of the face. When the flange of the OPA is at the corner of the mouth, the tip is at the angle of the mandible. Insert the OPA so that it curves upward toward the hard palate as it enters the mouth.



- 3 As the OPA passes through the oral cavity and approaches the posterior wall of the pharynx, rotate the device 180° into the proper position. You can also insert the OPA at a 90° angle to the mouth and then turn it down toward the posterior pharynx as you advance the device.

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NEXT

CHALLENGE US

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



OROPHARYNGEAL AIRWAY (OPA)

3 As the OPA passes through the oral cavity and approaches the posterior wall of the pharynx, rotate the device 180° into the proper position. You can also insert the OPA at a 90° angle to the mouth and then turn it down toward the posterior pharynx as you advance the device.

In both methods, the goal is to curve the device around the tongue so that you do not inadvertently push the tongue back into the pharynx rather than pull it forward. Alternatively, you can insert the OPA straight in while using a tongue depressor or similar device to hold the tongue forward as you advance the OPA.



Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

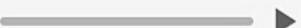
1 2 **NEXT**

CHALLENGE US ?

Coach



Push ▶ for reading content aloud.



OROPHARYNGEAL AIRWAY (OPA)



Caution: Using an OPA

- OPAs that are too large may obstruct the larynx or cause trauma to the laryngeal structures.
- OPAs that are too small or inserted improperly may push the base of the tongue back and obstruct the airway.
- Insert the OPA carefully to avoid soft tissue trauma to the lips and tongue.
- Remember to use the OPA only in the unresponsive patient with no cough or gag reflex. If the patient has a cough or gag reflex, the OPA may stimulate vomiting and laryngospasm.

[PREVIOUS](#)

1

2

[I KNEW](#)[GOT IT NOW](#)[THINK I GOT IT](#)[I DON'T GET IT](#)[CHALLENGE US](#)

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



Select the first step in the use of an oropharyngeal airway.

CHOOSE THE CORRECT ANSWER

Clear the mouth and pharynx

Ventilate the patient with a bag-mask device

Rotate the oropharyngeal airway into the proper position

Measure and select the proper size oropharyngeal airway

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

49% | PROGRESS: HeartCode ACLS 2025

~4h 12m left

Coach



Learn more here:

[Oropharyngeal Airway \(...\)](#)

Select the first step in the use of an oropharyngeal airway.

You got it!

 Your Answer

| Clear the mouth and pharynx



I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



49% PROGRESS: HeartCode ACLS 2025

~4h 12m left

TT Ahmed Othman

A



Coach



Push ▶ for reading content aloud.



What is a potential complication of inserting an oropharyngeal airway that is too small?

CHOOSE THE CORRECT ANSWER

Trauma to laryngeal structures

Soft tissue trauma to the lips

Pushing the base of the tongue back

Laryngeal obstruction

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



49% PROGRESS: HeartCode ACLS 2025

~4h 12m left

TT Ahmed Othman

A



Coach



Maybe this can help you?

Oropharyngeal Airway (...)



What is a potential complication of inserting an oropharyngeal airway that is too small?

Not there yet...

Your Answer

| Laryngeal obstruction

Correct Answer

| Pushing the base of the tongue back

Learn more here: Oropharyngeal Airway (OPA)



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

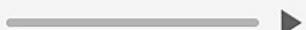


ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



Self-Assessment



Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

NASOPHARYNGEAL AIRWAY (NPA)

NPA Insertion Technique

1 Select the proper size.

- Compare the outer circumference of the NPA with the inner opening of the nostrils. The NPA should not be so large that it causes sustained blanching of the nostrils. You can use the diameter of the patient's smallest finger as a guide for the proper size.
- The NPA should be as long as the distance from the tip of the patient's nose to the earlobe.



1

2

NEXT

CHALLENGE US



Coach



Push ▶ for reading content aloud.



NASOPHARYNGEAL AIRWAY (NPA)



- 2 Lubricate the airway with a water-soluble lubricant or anesthetic jelly.
- 3 Insert the airway through the nostril in a posterior direction perpendicular to the plane of the face. Pass it gently along the floor of the nasopharynx. If you encounter resistance,
 - Slightly rotate the NPA to insert at the angle of the nasal passage and nasopharynx
 - Attempt to place through the other nostril (the size of a patient's nasal passages varies)
- 4 Reevaluate often and maintain head tilt by using a chin lift or jaw thrust. Mucus, blood, vomit, or the soft tissues of the pharynx can obstruct the NPA, which has a small internal diameter. Frequently evaluate and suction the airway if needed to ensure patency.

1 2 **NEXT**

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



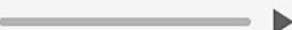
ADVANCED BEGINNER



Coach



Push ▶ for reading content aloud.



NASOPHARYNGEAL AIRWAY (NPA)

⚠ Caution: Using an NPA

- Insert the airway gently to avoid complications. The airway can irritate the mucosa or lacerate adenoidal tissue and cause bleeding, and the patient could aspirate blood clots. You may need to suction to remove blood or secretions.
- An **improperly sized NPA** may enter the esophagus. With active ventilation, such as bag-mask ventilation, an NPA in the esophagus may cause gastric inflation and possible hypoventilation.
- An NPA may cause laryngospasm and vomiting, even though it is commonly tolerated by semiconscious patients.
- Use **caution in patients with facial trauma** because of the risk of misplacement into the cranial cavity through a fractured cribriform plate.

PREVIOUS

1

2

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



50% PROGRESS: HeartCode ACLS 2025

TT Ahmed Othman

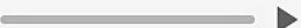
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Coach



Push ▶ for reading content aloud.



FILL IN THE MISSING WORD(S)

The length of a correctly sized nasopharyngeal airway is the same as the distance from the tip of the patient's nose to the .

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



50% PROGRESS: HeartCode ACLS 2025

~4h 11m left

Ahmed Othman

A



Coach



Learn more here:

Nasopharyngeal Airway...



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



What is a potential complication of using a nasopharyngeal airway that is too long?

CHOOSE THE CORRECT ANSWER

Exiting through the oral cavity

Entering the esophagus

Blocking carotid blood flow

Nasopharyngeal obstruction

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



50% PROGRESS: HeartCode ACLS 2025

~4h 12m left

TT Ahmed Othman

A



Coach



Learn more here:

Nasopharyngeal Airway...



What is a potential complication of using a nasopharyngeal airway that is too long?

You got it!

Your Answer | Entering the esophagus

I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



What is the most serious potential complication of nasopharyngeal airway insertion into a patient with facial trauma?

CHOOSE THE CORRECT ANSWER

Laryngospasm

Trismus

Hypopharyngeal placement

Misplacement into the cranial cavity

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



LTI does not have a session time





50% | PROGRESS: HeartCode ACLS 2025

~4h 13m left

TT Ahmed Othman



Coach



Learn more here:

Nasopharyngeal Airway...



What is the most serious potential complication of nasopharyngeal airway insertion into a patient with facial trauma?

You got it!

Your Answer

| Misplacement into the cranial cavity



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



LTI does not have a session time



Coach



Push ▶ for reading content aloud.



SUCTIONING

Suctioning Devices

Suctioning is essential to maintain a patient's airway. Suction devices include portable and wall-mounted units.

- Portable suction devices are easy to transport but may not provide adequate suction power.
- Wall-mounted suction units should be able to provide an airflow of more than 40 L/min at the end of the delivery tube and a vacuum of more than -300 mm Hg when the tube is clamped at full suction.
- Suction the airway immediately if the patient has copious secretions, blood, or vomit.

For suctioning, you will use both **soft flexible** and **rigid catheters**.

Soft flexible catheters

- In the mouth or nose
- For endotracheal tube deep suctioning
- For aspiration of thin secretions from the oropharynx and nasopharynx
- To perform intratracheal suctioning
- To suction through an in-place airway (ie, NPA) to access the back of the pharynx in a patient with clenched teeth

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NEXT

CHALLENGE US



Self-Assessment

Adjust your competence estimate to the right to focus on the questions

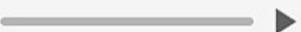


ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



SUCTIONING

For suctioning, you will use both **soft flexible** and **rigid catheters**.

Soft flexible catheters

- In the mouth or nose
- For endotracheal tube deep suctioning
- For aspiration of thin secretions from the oropharynx and nasopharynx
- To perform intratracheal suctioning
- To suction through an in-place airway (ie, NPA) to access the back of the pharynx in a patient with clenched teeth

Rigid catheters

- To suction the oropharynx
- For suctioning thick secretions and particulate matter
- For more effective suctioning of the oropharynx

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NEXT

CHALLENGE US



Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



SUCTIONING

Oropharyngeal Suctioning Procedure

Follow these steps to perform oropharyngeal suctioning:

- Measure the catheter before suctioning.
- Gently insert the suction catheter or device into the oropharynx beyond the tongue. **Do not insert it any further than the distance from the tip of the nose to the earlobe.**
- Apply suction by occluding the side opening of the catheter while withdrawing with a rotating or twisting motion .
- If using a rigid suction device, place the tip gently into the oral cavity. Advance by pushing the tongue down to reach the oropharynx if necessary.
- Limit each suction attempt to 10 seconds or less.

Providers should suction the airway immediately if there are copious secretions, blood, vomit, or a foreign body. Use large-bore, nonkinking suction tubing and a large suction catheter with a rigid pharyngeal tip. High-suction pressure may be required.

PREVIOUS

1

2

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



ET TUBE SUCTIONING



ET Tube Suctioning Procedure

Patients with pulmonary secretions may require suctioning even after endotracheal (ET) intubation.

Follow these steps to perform ET tube suctioning:

- Use a sterile technique to reduce the likelihood of airway contamination.
- Gently insert the catheter into the ET tube but no further because it may injure the ET mucosa or stimulate coughing or bronchospasm. Be sure the side opening is not occluded during insertion.
- Apply suction by occluding the side opening only while withdrawing the catheter with a rotating or twisting motion.
- Do not exceed 10 seconds for a suction attempt. To avoid hypoxemia, precede and follow suctioning attempts with a short period of administration of 100% oxygen.

Monitor the patient's heart rate, pulse, oxygen saturation, and clinical appearance during suctioning. If bradycardia develops, oxygen saturation drops, or clinical appearance deteriorates, interrupt suctioning at once. Administer high-flow oxygen until the heart rate returns to normal and the clinical condition improves. Assist ventilation as needed.

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment



Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



51% PROGRESS: HeartCode ACLS 2025

~4h 11m left

TT Ahmed Othman

A



Coach



Push ▶ for reading content aloud.



What is the **maximum length of suction catheter** that should be **inserted** into the patient's oropharynx **beyond the tongue**?

CHOOSE THE CORRECT ANSWER

The corner of the mouth to the epigastric region

The corner of the mouth to the laryngeal cartilage

The tip of the nose to the corner of the mouth

The tip of the nose to the earlobe

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



LTI does not have a session time





51% PROGRESS: HeartCode ACLS 2025

~4h 11m left

TT Ahmed Othman

A



Coach



Learn more here:

Suctioning



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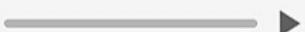
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Coach



Push ▶ for reading content aloud.



When should you **occlude the side opening of a suction catheter** when performing oropharyngeal suctioning?

CHOOSE THE CORRECT ANSWER

During insertion of the catheter

Only when secretions are visualized

During both withdrawal and insertion

While withdrawing the catheter

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Learn more here:

 Suctioning

When should you **occlude the side opening of a suction catheter** when performing oropharyngeal suctioning?

You got it!

 Your Answer| **While withdrawing the catheter**

I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions

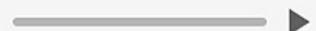


ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



VENTILATION WITH ADVANCED AIRWAYS

Selecting an Advanced Airway

Selecting an advanced airway device depends on the high-performance team's training, scope of practice, and equipment.

Advanced airways include:

- ET tube.
- Laryngeal tube.
- Laryngeal mask airway.

Caution: Advanced Airways

- An advanced airway may fail for a variety of reasons, so be sure to have an alternative airway management strategy, such as a bag-mask device.
- For any advanced airway device, the ventilation rate is once every 6 seconds during cardiac arrest and respiratory arrest.
- We do not recommend the routine use of cricoid pressure in cardiac arrest.
- Only experienced providers should insert these advanced airways.

1 2 3 **NEXT**

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

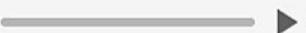


ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



VENTILATION WITH ADVANCED AIRWAYS

 Endotracheal (ET) Tube

If you are assisting with ET intubation, refer to these basic steps for performing the procedure

- Prepare for intubation by assembling the necessary equipment.
- Perform ET intubation.
- Inflate the cuff on the tube.
- Attach the ventilation bag.
- Confirm correct placement by physically examining the patient and using a confirmation device.
 - Continuous waveform capnography is recommended (in addition to clinical assessment) as the most reliable method of confirming and monitoring correct placement of an ET tube. However, you may use colorimetric and nonwaveform carbon dioxide detectors when waveform capnography is not available.
- Secure the tube in place and monitor for displacement. Use the DOPE mnemonic (displacement, obstruction, pneumothorax, equipment failure) to help you troubleshoot.

PREVIOUS

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NEXT

CHALLENGE US

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions

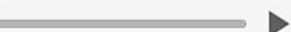


ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



VENTILATION WITH ADVANCED AIRWAYS

Laryngeal Tube

The advantage of the laryngeal tube is that it is easy to place without additional equipment. If you are trained to use a laryngeal tube, you may consider it as an alternative to bag-mask ventilation or ET intubation for airway management in cardiac arrest.

Laryngeal Mask Airway

The laryngeal mask airway is an advanced airway alternative to ET intubation and provides comparable ventilation for airway management in cardiac arrest. There are many varieties of laryngeal airway, including some that allow passage of an endotracheal tube.

PREVIOUS

1

2

3

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Learn more here:

 Ventilation with Advan...

What is the most reliable method of confirming and monitoring correct placement of an endotracheal tube?

You got it!

Your Answer | Quantitative waveform capnography

I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions





53% PROGRESS: HeartCode ACLS 2025

~4h 5m left

TT Ahmed Othman

A

←

Coach



Push ► for reading content aloud.



What is the recommended ventilation rate for an adult in cardiac arrest with an advanced airway device in place?

CHOOSE THE CORRECT ANSWER

Once every 15 compressions

Twice every 30 compressions

Once every 6 seconds

Once every 4 seconds

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



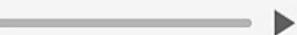
LTI does not have a session time



Coach



Push ▶ for reading content aloud.



What is the **recommended ventilation rate** for an adult in cardiac arrest with an advanced airway device in place?

CHOOSE THE CORRECT ANSWER

Once every 15 compressions

Twice every 30 compressions

Once every 6 seconds

Once every 4 seconds

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



LTI does not have a session time





53% PROGRESS: HeartCode ACLS 2025

~4h 5m left

TT Ahmed Othman

A



Coach



Learn more here:

Ventilation with Advan...



What is the recommended ventilation rate for an adult in cardiac arrest with an advanced airway device in place?

You got it!

Your Answer | Once every 6 seconds

 I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



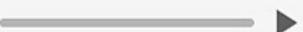
LTI does not have a session time



Coach



Push ► for reading content aloud.



Introduction

A 54-year-old man became unconscious after suffering from severe shortness of breath and difficulty breathing. You arrive on scene and confirm that the scene is safe.

CHALLENGE US

NEXT

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



53% PROGRESS: HeartCode ACLS 2025

TT Ahmed Othman

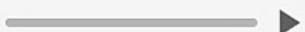
A

←

Coach



Push ▶ for reading content aloud.



What initial actions should be taken?

SELECT ALL THAT APPLY

- Check for responsiveness
- Attach a 12-lead ECG
- Assess airway, breathing, and circulation (ABCs)
- Consider an advanced airway
- Call for additional help

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



The patient is unresponsive and not breathing but has a strong pulse.

What should your initial actions include?



SELECT ALL THAT APPLY

- Begin CPR
- Open the patient's airway via a head tilt-chin lift or jaw thrust
- Administer high-flow oxygen via a nonrebreathing mask
- Initiate ventilation with a bag-mask device attached to supplemental oxygen

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions

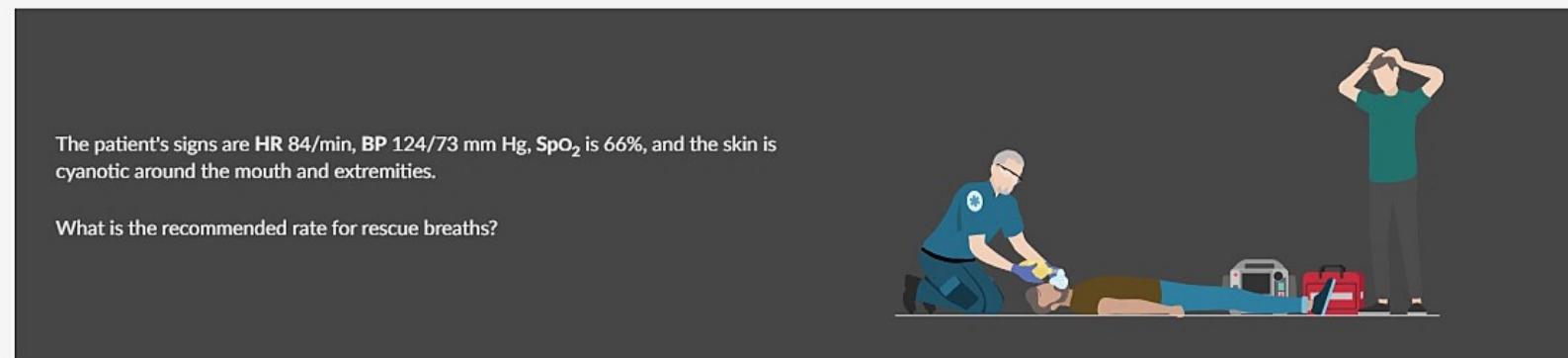


ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



CHOOSE THE CORRECT ANSWER

2 breaths every 10 seconds

1 breath every 6 seconds

2 breaths every 5 to 6 seconds

1 breath every 3 seconds

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED RECOMMENDED

Coach



Push ▶ for reading content aloud.



While ventilating the patient, you hear loud gurgling sounds coming from the airway.

What is your next action?

CHOOSE THE CORRECT ANSWER

Increase the ventilation rate

Increase ventilation volume

Suction the airway

Intubate the patient

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

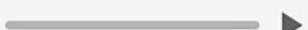


ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



The patient is not responding well to ventilation and suctioning. You decide to intubate the patient.

In addition to clinical assessment, what is the single most reliable method of confirming and monitoring correct placement of the ET tube?

CHOOSE THE CORRECT ANSWER

Auscultation

Chest x-ray

Quantitative waveform capnography

Direct visualization

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



53% PROGRESS: HeartCode ACLS 2025

~4h 5m left

TT Ahmed Othman

A



Coach



Push ► for reading content aloud.



What initial actions should be taken?

You got it!

<input checked="" type="checkbox"/> Your Answer	Check for responsiveness
	Learn more
<input checked="" type="checkbox"/> Your Answer	Assess airway, breathing, and circulation (ABCs)
<input checked="" type="checkbox"/> Your Answer	Call for additional help

 I Know It

[CHALLENGE US](#)

[NEXT](#)

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

The patient is unresponsive and not breathing but has a strong pulse.

What should your initial actions include?



You got it!

✓ Your Answer

Open the patient's airway via a head tilt-chin lift or jaw thrust

[Learn more](#)

✓ Your Answer

Initiate ventilation with a bag-mask device attached to supplemental oxygen



I Know It

CHALLENGE US

NEXT

Coach



Push ► for reading content aloud.



You got it!



Your Answer

1 breath every 6 seconds

[Learn more](#)

CHALLENGE US

NEXT



I Know It

Self-Assessment



Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



53% PROGRESS: HeartCode ACLS 2025

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TT Ahmed Othman

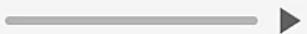
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←

Coach



Push ▶ for reading content aloud.



While ventilating the patient, you hear loud gurgling sounds coming from the airway.

What is your next action?

You got it!



Your Answer

Suction the airway

[Learn more](#)



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



The patient is not responding well to ventilation and suctioning. You decide to intubate the patient.

In addition to clinical assessment, what is the single most reliable method of confirming and monitoring correct placement of the ET tube?



You got it!

✓ Your Answer

Quantitative waveform capnography

[Learn more](#)



I Know It

CHALLENGE US

NEXT

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions

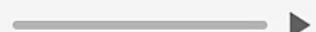


ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



BRADYCARDIA INTRODUCTION

Bradycardia is generally defined as any rhythm disorder with a heart rate less than 60/min; but for most patients, bradycardia is not symptomatic until the heart rate is less than 50/min. The key is to determine if the bradycardia is causing a **perfusion deficit** to the vital organs.



Managing Bradycardia

- Differentiating between signs and symptoms caused by the slow rate vs those that are unrelated
- Correctly diagnosing the presence and type of atrioventricular (AV) block
- Using atropine as the drug intervention of **first choice**
- Deciding when to initiate **transcutaneous pacing (TCP)**
- Deciding when to start **epinephrine or dopamine** to maintain heart rate and blood pressure
- Knowing when to seek **expert consultation** about complicated rhythm interpretation, drugs, or management decisions

1

2

NEXT

CHALLENGE US

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



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BRADYCARDIA INTRODUCTION

Heart Symptomatic Bradycardia

Bradycardia may have multiple causes, including some that are physiologic and require no assessment or therapy. For example, a well-trained athlete may have a resting heart rate less than 50/min or occasionally lower.

In contrast, some patients have heart rates in the normal range, but these rates are inappropriate or insufficient for them. This is called a **functional or relative bradycardia**. For example, a heart rate of 70/min may be relatively too slow for a patient in cardiogenic or septic shock.

The key to managing symptomatic bradycardia is determining which signs or symptoms are due to the decreased heart rate. A **symptomatic bradycardia** exists clinically when **3 criteria** are present:

- 1 The heart rate is slow.
- 2 The patient has symptoms.
- 3 The symptoms are due to the slow heart rate.

PREVIOUS

1

2

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment



Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



54% PROGRESS: HeartCode ACLS 2025

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TT Ahmed Othman

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Coach



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Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

SIGNS AND SYMPTOMS OF BRADYCARDIA

You must perform a focused history and physical examination to identify the signs and symptoms of a bradycardia.

Symptoms

- Chest discomfort or pain
- Shortness of breath
- Decreased level of consciousness
- Weakness
- Fatigue
- Light-headedness
- Dizziness
- Presyncope or syncope

Signs

- Hypotension
- Drop in blood pressure on standing (orthostatic hypotension)
- Diaphoresis
- Pulmonary congestion on physical examination or chest x-ray
- Frank congestive heart failure or pulmonary edema

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US ?

Coach



Push ▶ for reading content aloud.



SIGNS AND SYMPTOMS OF BRADYCARDIA

- Shortness of breath
- Decreased level of consciousness
- Weakness
- Fatigue
- Light-headedness
- Dizziness
- Presyncope or syncope

Signs

- Hypotension
- Drop in blood pressure on standing (orthostatic hypotension)
- Diaphoresis
- Pulmonary congestion on physical examination or chest x-ray
- Frank congestive heart failure or pulmonary edema
- Bradycardia-related (escape) frequent premature ventricular complexes or ventricular tachycardia (VT)

Sometimes the symptom is not due to the bradycardia. For example, hypotension associated with bradycardia may be due to myocardial dysfunction rather than the bradycardia. Keep this in mind when you assess the patient's response to treatment.

 I KNEW

GOT IT NOW

THINK I GOT IT

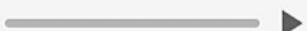
I DON'T GET IT

CHALLENGE US  ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



Which signs and symptoms indicate a symptomatic bradycardia?

SELECT ALL THAT APPLY

<input checked="" type="checkbox"/> Pulmonary edema	<input type="checkbox"/> Respiratory arrest
<input checked="" type="checkbox"/> Hypotension	<input type="checkbox"/> Vomiting
<input type="checkbox"/> Fever	<input checked="" type="checkbox"/> Shortness of breath

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



54% PROGRESS: HeartCode ACLS 2025

~4h 10m left

TT Ahmed Othman

A



Coach



Learn more here:

Signs and Symptoms of ...



Which signs and symptoms indicate a symptomatic bradycardia?

You got it!

- Your Answer | **Shortness of breath**
- Your Answer | **Hypotension**
- Your Answer | **Pulmonary edema**



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

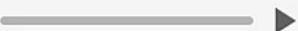


ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



SECOND- AND THIRD-DEGREE ATRIOVENTRICULAR BLOCKS

It is important to know the major AV blocks because treatment decisions are based on the type of block. Complete (or third-degree) AV block is generally the most clinically significant block because it is most likely to cause cardiovascular collapse and require immediate pacing. Recognizing a stable bradycardia due to AV block is a primary goal, and recognizing the type of AV block is secondary.

Major AV Blocks

- Sinus bradycardia
- First-degree AV block
- Second-degree AV block
 - Type I (Wenckebach/Mobitz I)
 - Type II (Mobitz II)
- Third-degree AV block

1 2 **NEXT**

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

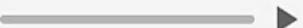


ADVANCED BEGINNER

Coach

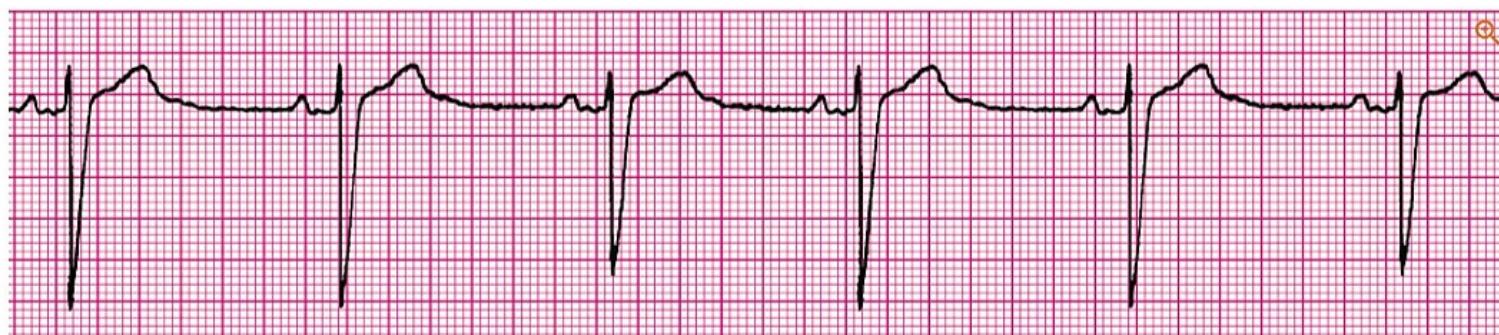


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SECOND- AND THIRD-DEGREE ATRIOVENTRICULAR BLOCKS

Examples



Sinus bradycardia with borderline first-degree AV block.

To determine the more challenging types of bradycardia, use the following tips for distinguishing the 2 types of second-degree AV blocks and third-degree AV blocks.

For second-degree type I AV block, the PR interval will get progressively longer until a beat is dropped.

PREVIOUS

1

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I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

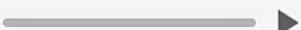


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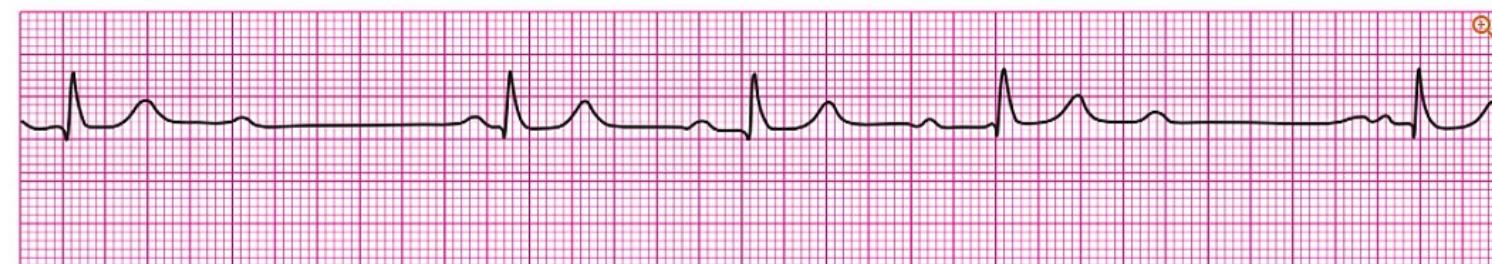
Coach



Push ▶ for reading content aloud.



SECOND- AND THIRD-DEGREE ATRIOVENTRICULAR BLOCKS



Second-degree AV block type I.

For second-degree type II AV blocks, the PR interval will stay the same length, but random QRS complexes will be dropped.



PREVIOUS

1

2

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions

ADVANCED BEGINNER

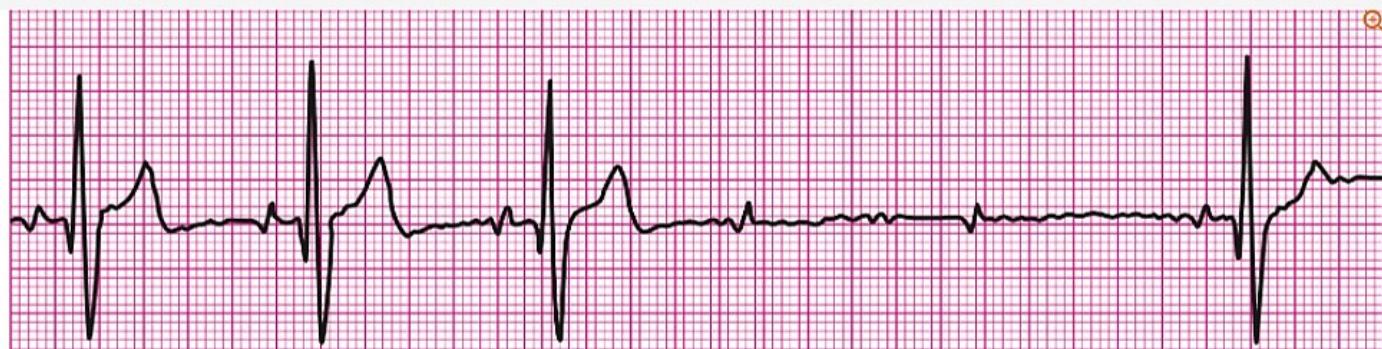
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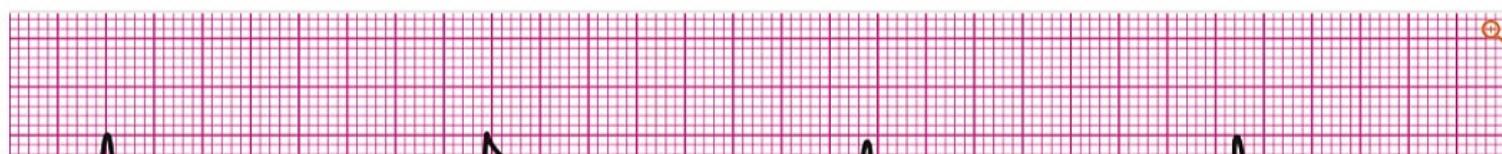


SECOND- AND THIRD-DEGREE ATRIOVENTRICULAR BLOCKS



Second-degree AV block type II.

For third-degree AV block, the P wave and QRS complex will not have any relationship with each other. The P waves and QRS complexes are independently firing. In all 3 blocks, there are **more P waves than QRS complexes**.



PREVIOUS

1

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I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US

?

Self-Assessment ?

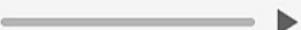
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ADVANCED BEGINNER

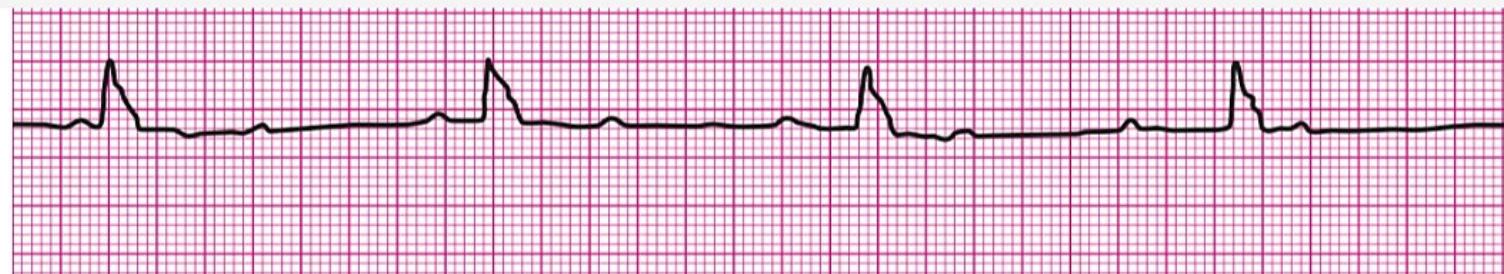
Coach



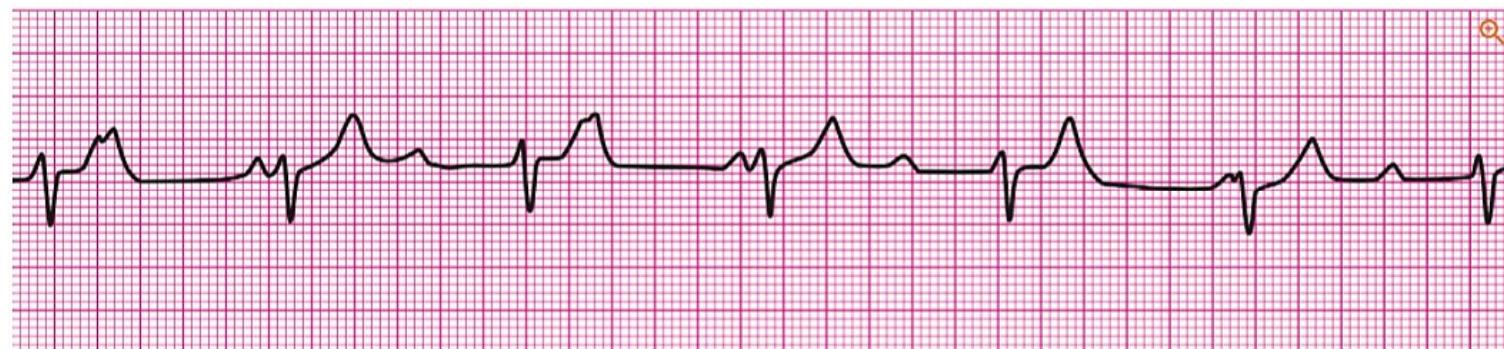
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SECOND- AND THIRD-DEGREE ATRIOVENTRICULAR BLOCKS



Complete AV block with a ventricular escape pacemaker (wide QRS: 0.12 to 0.14 second).



Third-degree AV block with a junctional escape pacemaker (narrow QRS: less than 0.12 second).

PREVIOUS

1

2

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US ?

Coach



Push ▶ for reading content aloud.



During analysis of the patient's ECG, you note the presence of more P waves than QRS complexes. You also note all PR intervals have a uniform length but random QRS complexes are dropped.

You can see an example ECG below.



What type of atrioventricular block is most likely present?

CHOOSE THE CORRECT ANSWER

Second-degree type I

Third-degree

Second-degree type II

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Maybe this can help you?

 Second- and Third-Deg...Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

During analysis of the patient's ECG, you note the presence of more P waves than QRS complexes. You also note all PR intervals have a uniform length but random QRS complexes are dropped.

You can see an example ECG below.



What type of atrioventricular block is most likely present?

Not there yet...

✖ Your Answer | Third-degree

Correct Answer | Second-degree type II

I Know It CHALLENGE US NEXT

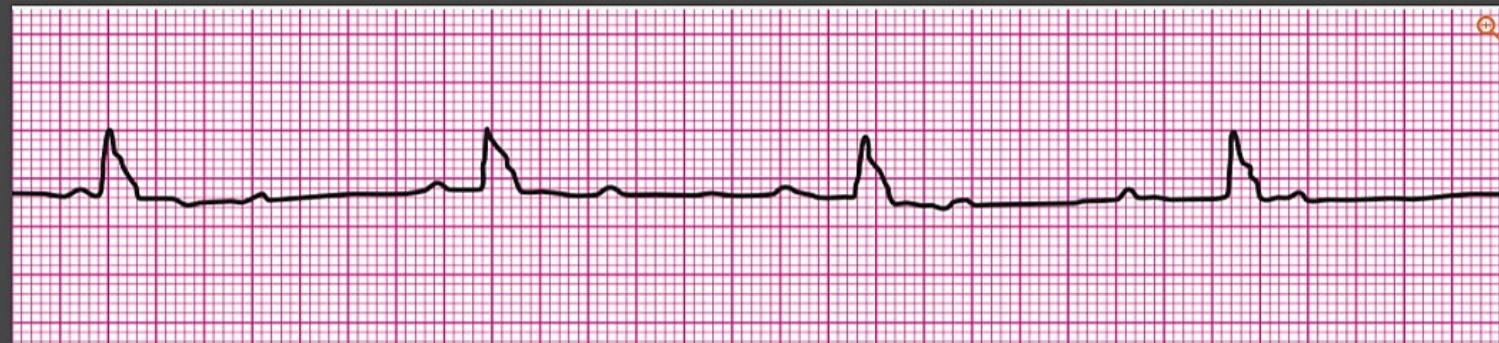
Coach



Push ▶ for reading content aloud.



During analysis of the patient's ECG, you note the presence of more P waves than QRS complexes. You also note the absence of a relationship between the P wave and the QRS complex. You can see an example of this rhythm below.



What type of atrioventricular block is most likely present?

CHOOSE THE CORRECT ANSWER

Third-degree

Second-degree type I

First-degree

Second-degree type II

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

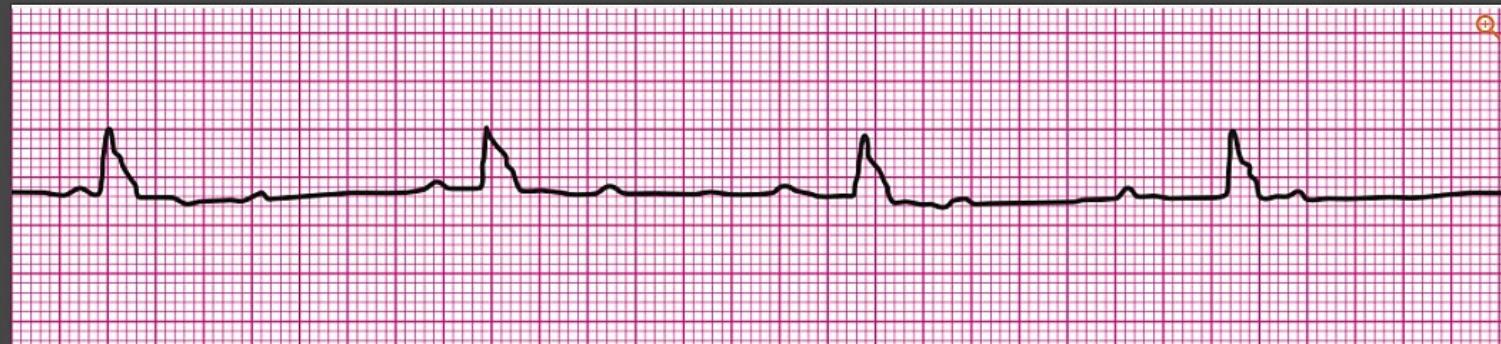
Coach



Learn more here:

 Second- and Third-Deg...

During analysis of the patient's ECG, you note the presence of more P waves than QRS complexes. You also note the absence of a relationship between the P wave and the QRS complex. You can see an example of this rhythm below.



What type of atrioventricular block is **most likely** present?

You got it!



Your Answer

| Third-degree



I Know It

CHALLENGE US

NEXT

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions

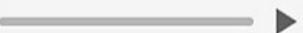


ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



MANAGING BRADYCARDIA



The Bradycardia Algorithm

The Adult Bradycardia Algorithm outlines the steps for assessing and managing a patient who presents with unstable bradycardia with a pulse. Implementing this algorithm begins with identifying bradycardia.

Identifying Bradycardia

Identify whether the heart rate is

- Bradycardia by definition (ie, heart rate less than 50/min)
- Inadequate for the patient's condition (functional or relative)

Primary Assessment

Next, perform the Primary Assessment, including the following:

A: Maintain patent airway.

B: Assist breathing as needed; give oxygen in case of hypoxemia; monitor oxygen saturation.

C: Monitor blood pressure, oximetry, and heart rate; obtain and review a 12-lead ECG; establish IV access.

D: Conduct a problem-focused history and physical examination; search for possible hypoxic and toxicologic causes, and treat possible contributing factors.

Self-Assessment



Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Adult Bradycardia Algorithm



1 2 3 4 **NEXT**

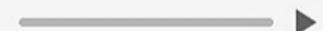
CHALLENGE US



Coach



Push ▶ for reading content aloud.



Self-Assessment



Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

MANAGING BRADYCARDIA

D: Conduct a problem-focused history and physical examination; search for possible hypoxic and toxicologic causes, and treat possible contributing factors.

Adult Bradycardia Algorithm



Assess appropriateness for clinical condition.
Heart rate typically <50/min if bradycardia.

Identify and treat underlying cause

- Maintain patent airway; assist breathing as necessary
- Oxygen (if hypoxemic)
- Cardiac monitor to identify rhythm; monitor blood pressure and oximetry
- IV access
- 12-Lead ECG if available; don't delay therapy
- Consider possible hypoxic and toxicologic causes

Persistent
bradycardia causing:

- Hypotension?
- Acutely altered mental status?
- Signs of shock?
- Ischemic chest discomfort?
- Acute heart failure?

Monitor and observe

No

Doses/Details

Atropine IV dose:
First dose: 1 mg bolus.
Repeat every 3-5 minutes.
Maximum: 3 mg.
Dopamine IV infusion:

NEXT

1

2

3

4

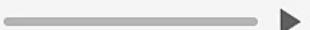
CHALLENGE US



Coach



Push ▶ for reading content aloud.

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

MANAGING BRADYCARDIA



Are Signs or Symptoms Caused by Persistent Bradyarrhythmia?

Look for these adverse signs and symptoms of the bradycardia:

- **Symptoms:** acutely altered mental status, signs of shock, ischemic chest discomfort, shortness of breath, weakness, fatigue, light-headedness, dizziness, presyncope or syncope
- **Signs:** hypotension, acute heart failure, ventricular arrhythmias related to the bradycardia
- **Are the signs and symptoms related to the slow heart rate?**

Sometimes the symptom is not due to the bradycardia. For example, hypotension associated with bradycardia may be due to myocardial dysfunction rather than the bradycardia. Keep this in mind when you reassess the patient's response to treatment.

Adult Bradycardia Algorithm



Assess appropriateness for clinical condition.
Heart rate typically <50/min if bradycardia.

Identify and treat underlying cause

- Maintain patent airway; assist breathing as necessary
- Oxygen (if hypoxic)
- Cardiac monitor to identify rhythm; monitor blood pressure and oximetry
- IV access
- 12-Lead ECG if available; don't delay therapy

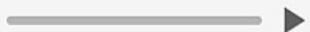
PREVIOUS 1 2 3 4 NEXT

CHALLENGE US ?

Coach



Push ▶ for reading content aloud.

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions

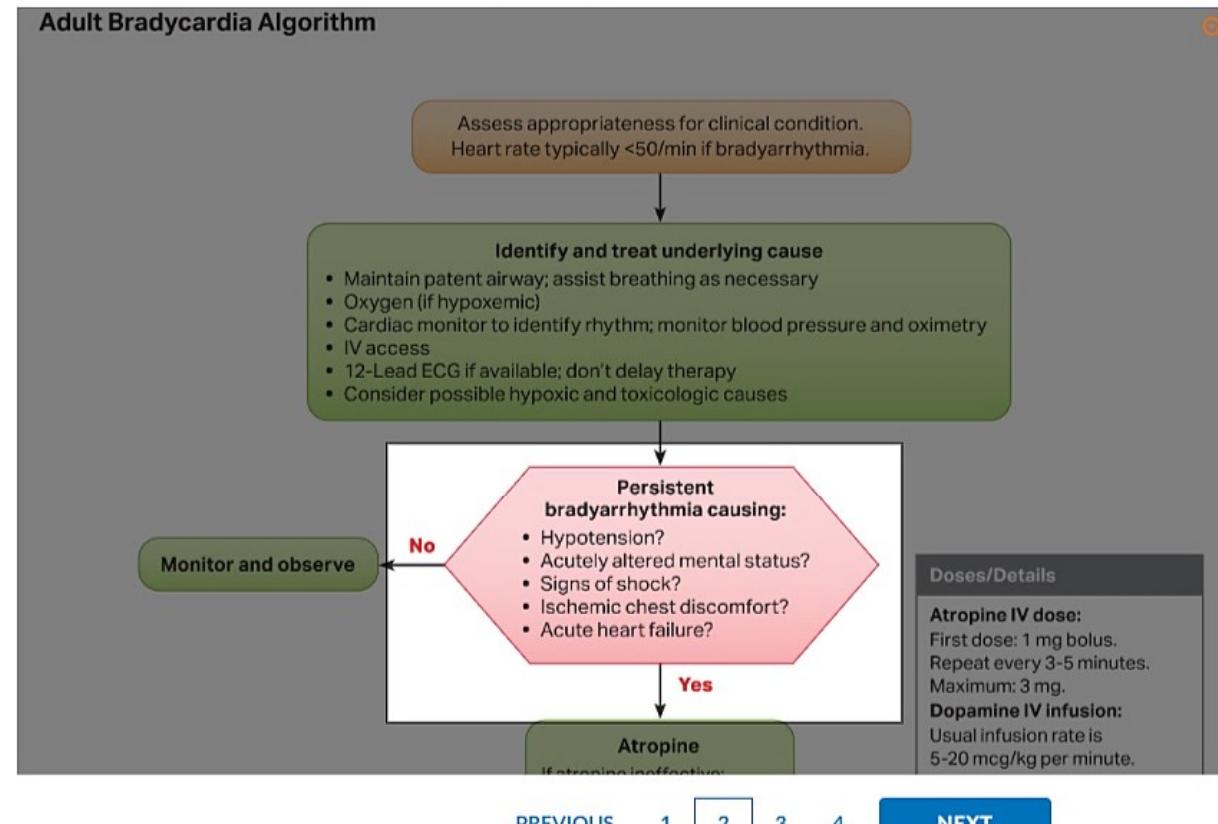


ADVANCED BEGINNER

MANAGING BRADYCARDIA

bradycardia. Keep this in mind when you reassess the patient's response to treatment.

Adult Bradycardia Algorithm



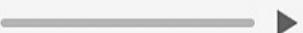
PREVIOUS 1 2 3 4 NEXT

CHALLENGE US ?

Coach



Push ▶ for reading content aloud.



MANAGING BRADYCARDIA

The key clinical question is whether the bradycardia is causing the patient's symptoms or some other illness is causing the bradycardia.

Assess for Adequate Perfusion?

You must now decide if the patient has adequate or poor perfusion.

- If the patient has **adequate perfusion**, monitor and observe.
- If the patient has **persistent bradycardia causing poor perfusion**, proceed to treatment.

Treatment Sequence Summary

If the patient has poor perfusion secondary to bradycardia, treat as follows:

- Give **atropine** as **first-line treatment**: atropine 1 mg IV—may repeat to a **total dose of 3 mg IV**.
- If atropine is ineffective, provide **transcutaneous pacing and/or dopamine 5 to 20 mcg/kg per minute (chronotropic or heart rate dose)**, or **epinephrine 2 to 10 mcg/min**.

Adult Bradycardia Algorithm



Assess appropriateness for clinical condition.
Heart rate typically <50/min if bradycardia.

PREVIOUS

1

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4

NEXT

CHALLENGE US



Self-Assessment

Adjust your competence estimate to the right to focus on the questions

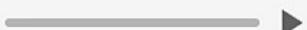


ADVANCED BEGINNER

Coach



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Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

MANAGING BRADYCARDIA

- IV access
- 12-Lead ECG if available; don't delay therapy
- Consider possible hypoxic and toxicologic causes

Monitor and observe

No

Persistent bradycardia causing:

- Hypotension?
- Acutely altered mental status?
- Signs of shock?
- Ischemic chest discomfort?
- Acute heart failure?

Yes

Atropine

If atropine ineffective:

- Transcutaneous pacing and/or
- **Dopamine** infusion or
- **Epinephrine** infusion

Consider:

- Expert consultation
- Transvenous pacing

Doses/Details

Atropine IV dose:
First dose: 1 mg bolus.
Repeat every 3-5 minutes.
Maximum: 3 mg.

Dopamine IV infusion:
Usual infusion rate is 5-20 mcg/kg per minute.
Titrate to patient response;
taper slowly.

Epinephrine IV infusion:
2-10 mcg per minute infusion.
Titrate to patient response.

Causes:

- Myocardial ischemia/infarction
- Drugs/toxicologic (eg, calcium-channel blockers, beta blockers, digoxin)
- Hypoxia
- Electrolyte abnormality (eg, hyperkalemia)

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PREVIOUS 1 2 3 4

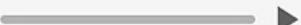
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CHALLENGE US ?

Coach



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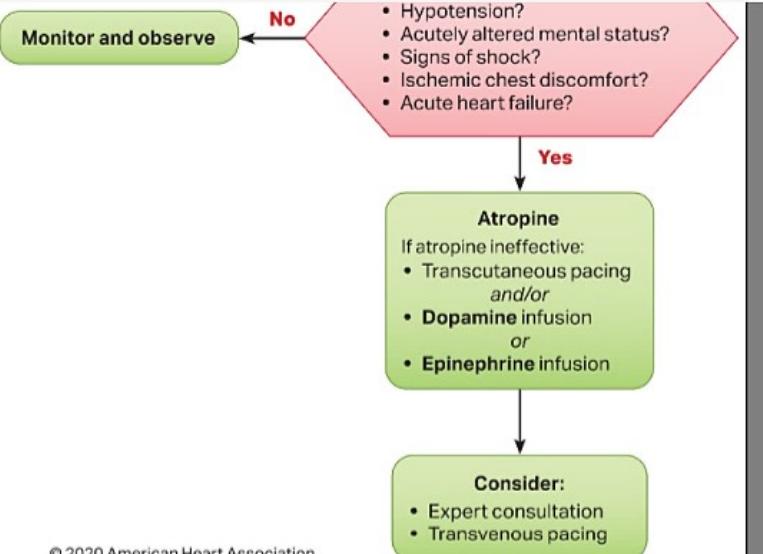
Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

MANAGING BRADYCARDIA



Doses/Details

Atropine IV dose:
First dose: 1 mg bolus.
Repeat every 3-5 minutes.
Maximum: 3 mg.

Dopamine IV infusion:
Usual infusion rate is
5-20 mcg/kg per minute.
Titrate to patient response;
taper slowly.

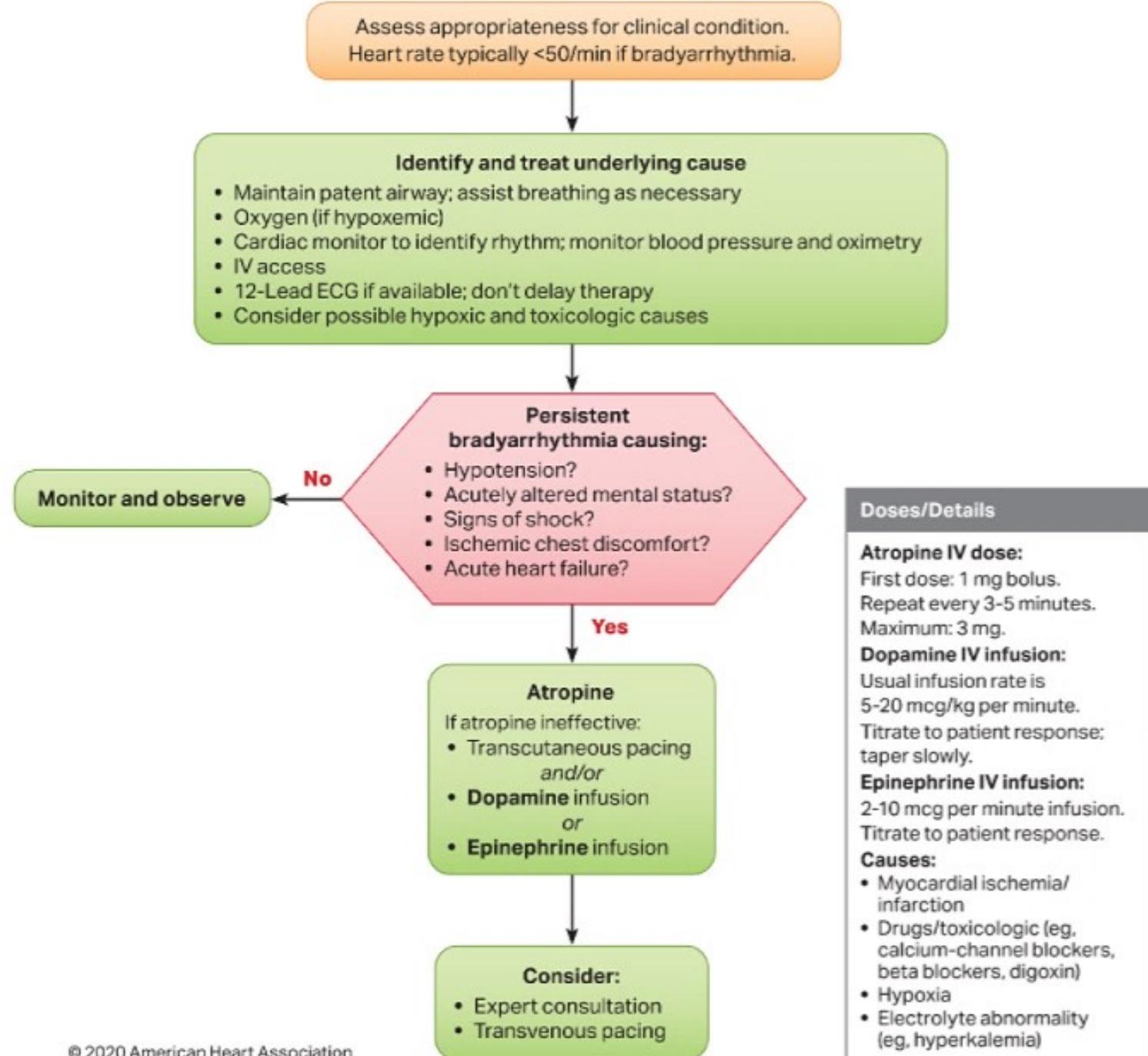
Epinephrine IV infusion:
2-10 mcg per minute infusion.
Titrate to patient response.

Causes:
• Myocardial ischemia/
infarction
• Drugs/toxicologic (eg,
calcium-channel blockers,
beta blockers, digoxin)
• Hypoxia
• Electrolyte abnormality
(eg, hyperkalemia)

PREVIOUS 1 2 3 4 NEXT

CHALLENGE US ?

Adult Bradycardia Algorithm



Coach



Learn more here:

 Managing Bradycardia

Symptomatic Bradycardia is defined by a heart rate less than beats per minute.

You got it!

 You Wrote

50

WHY?



I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



LTI does not have a session time





56% PROGRESS: HeartCode ACLS 2025

~4h 1m left

TT Ahmed Othman

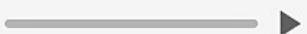
A



Coach



Push ▶ for reading content aloud.



What is the first-line treatment for unstable bradycardia?

CHOOSE THE CORRECT ANSWER

Epinephrine

Atropine

Lidocaine

Amiodarone

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



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~4h 1m left

TT Ahmed Othman

A

◀

Coach



Learn more here:

Managing Bradycardia



What is the first-line treatment for unstable bradycardia?

You got it!

Your Answer

| Atropine



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

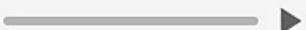


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ATROPINE FOR BRADYCARDIA

Indications

If you find no immediately reversible causes, atropine remains the first-line drug for acute stable bradycardia. Atropine sulfate acts by reversing cholinergic-mediated decreases in the heart rate and AV node conduction. Dopamine and epinephrine may be successful as an alternative to TCP.

How to Administer

For bradycardia, give atropine 1 mg IV every 3 to 5 minutes (maximum dose of 3 mg IV).

- Note that atropine doses of less than 0.5 mg IV may further slow the heart rate.

Use atropine cautiously in the presence of acute coronary ischemia or myocardial infarction (MI). An atropine-mediated increase in heart rate may worsen ischemia or increase infarct size.

1 2 **NEXT**

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



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ATROPINE FOR BRADYCARDIA

Other Treatments

Do not rely on atropine in Mobitz type II second-degree or third-degree AV block or in patients with third-degree AV block with a new wide QRS complex. These bradycardias likely will not respond to reversal of cholinergic effects by atropine.

Preferably, treat them with TCP or β -adrenergic support as temporizing measures while the patient is prepared for transvenous pacing. Atropine administration should not delay external pacing or β -adrenergic infusion for patients with impending cardiac arrest.

Alternative drugs may also be appropriate in special circumstances, such as the overdose of a β -blocker or calcium channel blocker. Do not wait for a maximum dose of atropine if the patient presents with second-degree or third-degree block; rather, move to a second-line treatment after 2 to 3 doses of atropine.

PREVIOUS

1

2

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



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~4h 2m left

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A



Coach



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What is the recommended first dose of IV atropine for the management of bradycardia?

CHOOSE THE CORRECT ANSWER

1 mg IV

1.5 mg IV

2 mg IV

0.5 mg IV

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



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A



Coach



Learn more here:

Atropine for Bradycardia



What is the recommended first dose of IV atropine for the management of bradycardia?

You got it!

Your Answer

| 1 mg IV



I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



57% | PROGRESS: HeartCode ACLS 2025  ~3h 58m left

TT Ahmed Othman

A

Coach



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What is a complication of IV atropine when administered in doses of less than 0.5 mg?

CHOOSE THE CORRECT ANSWER

Reentrant tachycardia

Further slowing of heart rate

Heart block

Bronchospasm

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



57% PROGRESS: HeartCode ACLS 2025

~3h 58m left

TT Ahmed Othman

A



Coach



Learn more here:

Atropine for Bradycardia



What is a complication of IV atropine when administered in doses of less than 0.5 mg?

You got it!

Your Answer

| Further slowing of heart rate



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



EPINEPHRINE AND DOPAMINE FOR BRADYCARDIA

Treatment Sequence: Epinephrine and Dopamine

A β -adrenergic infusion (ie, dopamine, epinephrine) is not usually a first-line agent for treating unstable bradycardia, but it can be used as an alternative when a bradycardia is unresponsive to treatment with atropine. You can also use a β -adrenergic infusion as a temporizing measure while the patient is prepared for transvenous pacing.

Because epinephrine and dopamine are vasoconstrictors as well as chronotropes, healthcare providers must **assess the patient's intravascular volume status and avoid hypovolemia when using these drugs**. Dobutamine (a β -adrenergic agonist) is appropriate when vasoconstriction is not desired.

Either epinephrine infusions or dopamine infusions may be used for patients with **stable bradycardia**, particularly if associated with hypotension, for whom atropine may be inappropriate or after atropine fails.

Dosage: Epinephrine and Dopamine

Begin epinephrine infusion at a dose of 2 to 10 mcg/min and titrate to patient response.

Begin dopamine infusion at 5 to 20 mcg/kg per minute and titrate to patient response. At lower doses, dopamine has a more selective effect on inotropy and heart rate; at higher doses (greater than 10 mcg/kg per minute), it also has vasoconstrictive effects.

I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



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What is the recommended infusion rate for epinephrine in the management of symptomatic bradycardia unresponsive to atropine?

CHOOSE THE CORRECT ANSWER

2 to 10 mcg/kg per minute

2 to 10 mcg per minute

5 to 20 mcg per minute

5 to 20 mcg/kg per minute

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



LTI does not have a session time



Coach



Learn more here:

 Epinephrine and Dopa...

What is the recommended infusion rate for epinephrine in the management of symptomatic bradycardia unresponsive to atropine?

You got it!

Your Answer

| 2 to 10 mcg per minute



I Know It

CHALLENGE US

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.

What is the recommended infusion rate for dopamine in the management of **symptomatic bradycardia unresponsive to atropine**?

CHOOSE THE CORRECT ANSWER

2 to 10 mcg/kg per minute

5 to 20 mcg/kg per minute

5 to 20 mcg per minute

2 to 10 mcg per minute

I KNOW IT **THINK I KNOW IT** **NOT SURE** **NO IDEA**

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions

Coach



Learn more here:

 Epinephrine and Dopa...

What is the recommended infusion rate for dopamine in the management of **symptomatic bradycardia unresponsive to atropine**?

You got it!

 Your Answer

| 5 to 20 mcg/kg per minute



I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions

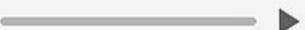


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Coach

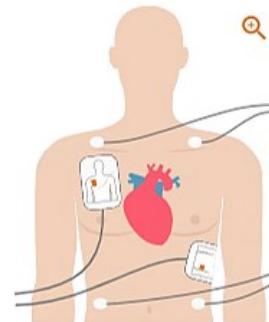


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TRANSCUTANEOUS PACING

Many devices can pace the heart by delivering an electrical stimulus, causing electrical depolarization and subsequent cardiac contraction, and **TCP** delivers pacing impulses to the heart through the skin via cutaneous electrodes. Most defibrillator manufacturers have added a pacing mode to manual defibrillators. Performing TCP is often as close as the nearest defibrillator, but you should know the indications, techniques, and hazards for using TCP.



TCP is a second-line treatment for unstable bradycardia, but do not rely on atropine in Mobitz type II second-degree or third-degree AV block or in patients with third-degree AV block with a new wide QRS complex. These bradycardias likely will not respond to reversal of cholinergic effects by atropine; preferably, treat them with TCP or β -adrenergic support as temporizing measures while the patient is prepared for transvenous pacing. Atropine administration should not delay external pacing or β -adrenergic infusion for patients with impending cardiac arrest.

1 2 **NEXT**

CHALLENGE US

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



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TRANSCUTANEOUS PACING

Indications and Precautions

Indications

- Hemodynamically unstable bradycardia (eg, hypotension, acutely altered mental status, signs of shock, ischemic chest discomfort, acute heart failure hypotension)
 - Unstable clinical condition likely due to the bradycardia
- Bradycardia with unstable ventricular escape rhythms

Precautions

- TCP is contraindicated in severe hypothermia.
- Conscious patients require analgesia for discomfort unless delay for sedation will cause or contribute to deterioration.
- Do not assess the carotid pulse to confirm mechanical capture; electrical stimulation causes muscular jerking that may mimic the carotid pulse.

PREVIOUS

1

2



I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



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HOW TO PERFORM TRANSCUTANEOUS PACING

TCP may be useful to treat unstable bradycardia. TCP is noninvasive and can be performed by ACLS providers. Consider immediate pacing in unstable patients with high-degree heart block when IV access is not available. It is reasonable to initiate TCP in unstable patients who do not respond to atropine.

After initiating TCP, confirm electrical and mechanical capture. Because heart rate is a major determinant of myocardial oxygen consumption, **set the pacing to the lowest effective rate based on clinical assessment and symptom resolution**. Reassess the patient for symptom improvement and hemodynamic stability. Give analgesics and sedatives for pain control. Note that many of these drugs may further decrease blood pressure and affect the patient's mental status. Try to identify and correct the cause of the bradycardia.

Limitations

TCP has its **limitations**—it can be painful and may not produce effective electrical and mechanical capture. If bradycardia is not causing the symptoms, TCP may be ineffective despite capture. For these reasons, **consider TCP as an emergent bridge to transvenous pacing in patients with significant sinus bradycardia or AV block**.

If you chose TCP as the second-line treatment and it is also ineffective (eg, inconsistent capture), begin an infusion of dopamine or epinephrine and prepare for possible transvenous pacing by obtaining expert consultation.

1 2 3

NEXT

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



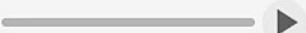
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CHALLENGE US

Coach



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HOW TO PERFORM TRANSCUTANEOUS PACING

Sedation and Pacing

Most conscious patients should be sedated before pacing. If the patient is in cardiovascular collapse or rapidly deteriorating, you may need to start pacing without prior sedation, particularly if sedation drugs are not immediately available. Evaluate the need for sedation in light of the patient's condition and need for immediate pacing. A review of sedation drugs is beyond the scope of this course, but the general approach could include the following:

- Give a parenteral narcotic for analgesia.
- Give parenteral benzodiazepine for anxiety and muscle contractions.
- Use a chronotropic infusion once available.
- Obtain expert consultation for transvenous pacing.

PREVIOUS 1 2 3 NEXT

CHALLENGE US 

Self-Assessment

Adjust your competence estimate to the right to focus on the questions

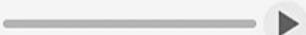


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HOW TO PERFORM TRANSCUTANEOUS PACING

Technique

Perform TCP by following these steps:

- 1 Place pacing electrodes on the chest according to package instructions.
- 2 Turn the pacer on.
- 3 Set the demand rate to 60 to 80/min. You can adjust this rate up or down (based on patient clinical response) once pacing is established.
- 4 Set the current milliamperes output 2 mA above the dose at which consistent capture is observed (safety margin). External pacemakers have either fixed rates (asynchronous mode) or demand rates.

PREVIOUS

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I KNEW

GOT IT NOW

THINK I GOT IT

I DON'T GET IT

CHALLENGE US



Self-Assessment

Adjust your competence estimate to the right to focus on the questions

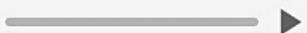


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Coach



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What therapy is a recommended alternative to vasopressor infusion in the management of unstable bradycardia unresponsive to atropine?

CHOOSE THE CORRECT ANSWER

Transcutaneous pacing

Extracorporeal membrane oxygenation

Ventricular assist device

IV bolus epinephrine

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



60% PROGRESS: HeartCode ACLS 2025
~3h 53m left

TT Ahmed Othman

A

Coach



Learn more here:

How to Perform Transc...



What therapy is a recommended alternative to vasopressor infusion in the management of unstable bradycardia unresponsive to atropine?

You got it!

Your Answer

| Transcutaneous pacing



I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions





61% PROGRESS: HeartCode ACLS 2025

Ahmed Othman

A



Coach



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What is your initial impulse setting for transcutaneous pacemaker use in the management of **unstable bradycardia**?

CHOOSE THE CORRECT ANSWER

30 to 50/min

60 to 80/min

90 to 110/min

50 to 70/min

I KNOW IT **THINK I KNOW IT** **NOT SURE** **NO IDEA**

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



—

Coach



Learn more here:

 How to Perform Transc...

What is your initial impulse setting for transcutaneous pacemaker use in the management of unstable bradycardia?

You got it!



Your Answer

| 60 to 80/min



I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



Coach



Push  for reading content aloud.



How much of a **safety margin** (energy above the dose at which consistent capture is observed) should you allow when using the **transcutaneous pacemaker**?

CHOOSE THE CORRECT ANSWER

15 mA

2 mA

10 mA

5 mA

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER 



61% | PROGRESS: HeartCode ACLS 2025  ~3h 49m left

TT Ahmed Othman

A



Coach



Learn more here:

 How to Perform Transc...



How much of a **safety margin** (energy above the dose at which consistent capture is observed) should you allow when using the **transcutaneous pacemaker**?

You got it!

 Your Answer

| 2 mA



I Know It

CHALLENGE US

NEXT

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions

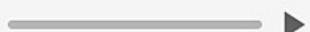


ADVANCED BEGINNER

Coach



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Introduction

A 75-year-old man fainted at home about 45 minutes ago. His wife says that he has not been acting right all week, with periodic episodes of confusion and fatigue. The patient presents with HR 30/min (weak pulse), BP 66/43 mm Hg, RR of 20/min, and SpO_2 is 89%. He is alert and responsive.

CHALLENGE US

NEXT

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER



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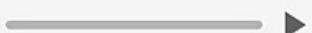
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Coach



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What should your next steps be to assess and treat this patient?

SELECT ALL THAT APPLY

- Establish IV access
- Obtain a 12-lead ECG
- Maintain the airway and administer oxygen if needed
- Prepare for synchronized cardioversion
- Transfer to interventional cardiology

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment 

Adjust your competence estimate to the right to focus on the questions



Coach



Push ▶ for reading content aloud.



CHOOSE THE CORRECT ANSWER

Third-degree AV block

Mobitz type II second-degree AV block

Sinus bradycardia

Mobitz type I second-degree AV block

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



You determine that the patient has poor perfusion.

What is your next step?



CHOOSE THE CORRECT ANSWER

Administer dopamine 20 to 25 mcg/kg per minute infusion

Administer lidocaine 1 mg/kg IV

Administer atropine 1 to 2 mg/kg infusion

Administer atropine 1 mg IV

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ▶ for reading content aloud.



The patient does not respond to atropine. The vital signs are **HR** 34/min, **BP** 66/43 mm Hg, **RR** 18/min, and **Spo₂** is 91%. He is responsive, but dizzy.

What options do you have to treat the patient?

SELECT ALL THAT APPLY

- Administer epinephrine 2 to 10 mcg per minute infusion
- Administer dopamine 5 to 20 mcg/kg per minute infusion
- Initiate transcutaneous pacing
- Perform synchronized cardioversion
- Administer epinephrine 2 mcg IV

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER

Coach



Push ► for reading content aloud.



The patient does not respond to treatments. The vital signs are **HR 40/min** (weak pulse), **BP 66/43 mm Hg**, **RR 18/min**, and **SpO₂ 91%**. He is responsive but states that he feels tired.



What should you consider?

SELECT ALL THAT APPLY

- Admit for observation
- Prepare for transvenous pacing
- Stop treatment
- Seek expert consultation

I KNOW IT

THINK I KNOW IT

NOT SURE

NO IDEA

Self-Assessment ?

Adjust your competence estimate to the right to focus on the questions



ADVANCED BEGINNER